Export market information behaviour of SME's

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Export Market Information Behaviour of SMEs:

The Influence of Firm Characteristics

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SOM theme B: Marketing and Networks

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Abstract

Thé magic word of the last years is internationalization. Researchers more and more focus on export market information and the relationship between this information and export performance. Just a few studies take into account the impact of firm characteristics on these topics. This study shows that country-of-origin, sector and size class (both individually and simultaneously) influence both the *number* of information sources consulted, and the *type* of information provider consulted. Besides, the relationship between the amount of export market information and export sales is not straightforward, but needs to be corrected for these three firm characteristics. These conclusions have implications for governmental export promotion campaigns, for the information behaviour of SME-managers, and for the strategies of information providers.

1. Introduction

This last decennia, magic lies within the word *internationalization*, borders fade and the world becomes one large marketplace. Starting negotiations with ten Eastern European countries and Cyprus, the EU is heading for an internal market of nearly 500 million consumers, reaching from the Atlantic Ocean to the Russian Federation and from the North Pole to the Black Sea. This offers indisputable opportunities for enterprising companies. Yet, how can companies isolate the risks and uncertainties in the decision process. The gathering, processing, and implementation of market information enable companies to deal with the threats and opportunities on export markets, thus enhancing the firm's competitiveness (*e.g.* Douglas en Craig 1983). Considering the above, the need for and acquisition of market information should be considerable among (new) exporters. However, the question raised in this paper is whether this holds true for SMEs and whether we can observe idiosyncrasies due to country, branch of industry or size class.

In this paper we will give an overview of the most recent literature on the role of market research in exporting firms, focusing on SMEs. Next, we will present the results of an empirical study among exporting SMEs in seven European countries, in which we will establish the influences of the country-of-origin, the sector and the firm size on both the *type* and the *amount* of information collected. Until now, no comparable study has been found that investigates these influences on the firms' information acquisition behaviour jointly. Lastly, we analyse the relationship between the amount of export market information collected and the export performance (using export sales as a proxy), which researchers often hypothesize to be straightforward and positive. Refuting this straightforwardness, we take into account the three firm characteristics mentioned above.

2. Export Research and Export Performance

In the export success literature, several studies occupied themselves with the association between strategic activities, including market research, and export performance (i.e. the outcomes of the export planning process). Christensen *et al* (1987), Donthu and Kim (1993), Dominguez and Sequeira (1993), Bijmolt and Zwart (1994), and Moini (1995) all conclude that the extent to which firms use (formal) export market research partly explains export performance. Other studies focus on the effects of informal information, gathered through everyday business, such as visits to trade fairs or to the export market. They indicate that this intelligence influences export performance positively (Denis en Depelteau 1985, Cavusgil and Naor 1987, Cavusgil en Zou 1994, Styles en Amber 1994, Moini 1995). Only a few studies found nonsignificant results (Madsen 1989, Bourantas and Halikias 1990, Koh 1991, De Luz 1993). Overall, conducting export market research improves the quality of the export planning process and, with this, the export performance.

3. Information and Firm Characteristics

The overall relationship between export market information and export performance being positive, investigating whether firm characteristics, such as size, sector, or country-of-origin, influence the use of export market research is of interest. Hart and Diamantopoulos (1993) also assume that the need for information varies over different sectors and size-classes, leading to firms consulting different information sources according to firm characteristics. Consequently, the relationship between export market information and export performance is hypothesized to be indirect, contrary to the direct, straightforward association assumed in most studies. Despite their reasoning, they are not able to find with empirical evidence for these plausible intervening influences. Nevertheless, this study is an indication of an upcoming body of research, assuming the existence of mediating variables, such as firm characteristics, that influence the relationship between export market research and export performance. In this paper we will focus on firm characteristics, being firm size, the sector of industry and country-of-origin.

3.1 *Firm Size*

Focusing on firm size, means focusing on the division between small- and medium-sized enterprises (SMEs) and large firms. Typical characteristics of SMEs are the central role of the owner/manager, and the scarcity of resources due to its size (Siropolis 1994). Diamantopoulos *et al* (1990) already concluded that companies systematically using export market information (users) are larger than nonusers. Samiee and Walters (1990) find similar results, with large companies more actively collecting export market information than smaller firms. Often SMEs ignore formal research due to the high expenses (Souchon en Diamantopoulos 1996), while only limitedly using governmentally offered services (Naidu en Rao 1993), though these can be very useful (Bell *et al* 1991). Belich and Dubinsky (1995) study the extent to which small companies use internal versus external sources. Their results suggest that this be partly related to the management strategy, claiming that, due to the dominant position of the owner/manager,

smaller companies sometimes give priority to subjective and personal goals, resulting in a less objective use of external information sources. So, smaller firms gather less information, especially less formal information, partly due to the scarcity of resources and the lack of interest of the owner/manager.

3.2 *National Culture*

Furthermore, a country's culture has long been identified as a key environmental characteristic underlying systematic differences in business behaviour (Hofstede 1980, 1994). Despite the large body of literature on this link between culture and company behaviour, the influence of country-of-origin on export market research and export performance has been largely ignored. Information gathering can be more integrated in one national (business) culture than in the other. A country scoring high on Hofstede's dimension 'Uncertainty Avoidance' could be expected to use more export market information, thus diminishing the uncertainties of exporting. Yet, considering the ever increasing globalization, business behaviour is hypothesized to converge; even more so, while businesses serve the same customer in the 'global arena'. Just a few studies occupy themselves specifically with the impact of the country-of-origin. Seringhaus (1993) finds Canadian and Austrian firms to differ with respect to the importance attached to information sources, with Austrian firms placing more emphasis on (international) trade fairs. Thus, the firms' geographical position has an implicit impact on management behaviour. The results of Zaheer and Zaheer (1997) support this impact of national culture on the information gathering behaviour.

3.3 *Branch of Industry*

Though most researcher designs focus on just one branch of industry, we assume that the sector affects the use of export market information. Only Hart and Diamantopoulos (1993) examine this relationship in connection with export performance, but they fail to find empirical support, as mentioned above. No other study tackling this issue could be found.

To sum up, the bulk of the relevant literature supports the notion of a direct relationship between export market information and export performance. Just a few studies verify this relationship for intervening firm characteristics. We attempt to throw some light upon this issue by examining the effects of country-of-origin, branch of industry and firm size on the information acquisition behaviour of SMEs, both investigating the *amount* and the *type* of information collected. Moreover, we will establish the relationship between information acquisition and export performance, controlling for the three variables mentioned above. Our conclusions will have implications for governmental support programs, for the decision process of (multinational) SMEs, and for the policy of the information providers.

4. Hypotheses and Data Set

Considering the above, we will test the hypotheses as represented in table 1. Hypotheses 1 through 4 will be tested using bivariate and multivariate analysis of variance. To test hypothesis 5, a loglinear analysis is used. For hypothesis 6, partial correlation coefficients are calculated between the export performance and the amount of export information, taking into account the three intervening variables.

Hyp. 1:	The *number* of information sources consulted by SMEs differs according to country-of-origin, according to branch of industry, and according to firm size.
Hyp. 2:	Country-of-origin, branch of industry, and firm size have interactive effects on the *number* of information sources consulted by SMEs.
Hyp. 3:	Country-of-origin, branch of industry, and firm size have interactive effects on the *type* of information source consulted by SMEs.
Hyp. 4:	The relationship between the amount of information collected and the export performance of the firm is influenced by country-of-origin, branch of industry, and firm size.

Table 1 The four hypotheses to be tested.

The empirical part of this paper draws on 1995-data gathered through an international mail survey by the INTERSTRATOS group (INTERnationalization of STRATegic Orientation of Small- and medium-sized enterprises)[1], resulting in a sample of 3562 SMEs. INTERSTRATOS is a joint research project into the internationalization of manufacturing SMEs in Europe, covering an annual survey research in seven cooperating countries

[1] The international research group known as INTERSTRATOS is formed by J. Hanns Pichler, Erwin Fröhlich, Inga Fröhlich en Peter Voithofer (Austria), Rik Donckels and Ria Aerts (Belgium), Graham Hall (Great Britain), Antti Haahti, Allan Lehtimäki† and Petri Ahokangas (Finland), Yvonne Prince and Liane Voerman (the Netherlands), Per-Anders Havnes, Arild Saether and Johanne Sletten (Norway), Håkan Boter and Carin Holmquist (Sweden), Margrit Habersaat and Hans J. Pleitner (Switzerland).

(Austria, Belgium, Finland, The Netherlands, Norway, Sweden en Switzerland) and five branches of industry (textiles and clothing; electronics; food, drink, and tobacco; wooden and timber products, including furniture; metal products and mechanical engineering). We operationalize firm size by using the number of full time employees and categorizing this variable into five categories (0-9 employees, 10-49 employees, 50-99 employees, 100-199 employees and 200-500 employees). In this research, we define an SME as a private, independent company with less than 500 employees. This is a somewhat broader range than the usual definition in the EU (250 employees). The questions in the survey of interest for us concern the external (domestic and foreign) information sources consulted by SMEs in 1995, their export sales and the firm characteristics country-of-origin, branch of industry, and firm size.

5. RESULTS

Table 2 presents the twelve information sources, available both in the domestic and in the foreign market, and the frequencies and percentages of firms that indicated to have consulted the specific information source.

Information sources	Domestic Sources		Foreign Sources	
	Percentage	*N*	*Percentage*	*N*
1 training institutions	35.2	2251	6.2	1950
2 business consultants	48.4	2283	13.6	1948
3 credit agencies	34.1	2249	6.3	1939
4 suppliers	36.9	2242	23.8	1947
5 customers	36.4	2220	27.8	1951
6 export clubs	19.0	2224	7.6	1942
7 Chamber of Commerce	38.7	2278	12.1	1953
8 research institutions	15.4	2210	5.8	1949
9 public promotion fairs	17.5	2221	4.6	1941
10 national trade fairs	43.7	2270	16.3	1900
11 international trade fairs	25.8	2169	37.9	1977
12 internat. organizations	5.6	2204	3.5	1944

Table 2 Percent of firms that consulted the domestic and foreign information sources in 1995, by type of source.

As table 2 shows, the domestic sources most often consulted are the business consultants (48%) and the national trade fairs (44%), closely followed by the Chambers of Commerce, the suppliers, the customers, the training institutions and the credit agencies (around 35%). If we turn our attention to the foreign sources, the first striking issue is the overall much lower usage of foreign sources. The international trade fairs are an exception, being even more often visited abroad (nearly 38%) than at home (about 26%). Again, foreign suppliers and customers are information providers consulted relatively often by firms (around 25%), as are foreign national trade fairs, business consultants and Chambers of Commerce, although to a much lesser extent (about 15%). Thus, both at home and abroad, SMEs consulted mainly national and international trade fairs, followed

by customers and suppliers.

5.1 *The Number of Information Sources*

The first two hypotheses concern differences between countries, sectors, and size-classes in the *number* of information sources consulted. To test these hypotheses, we define the quantity of domestic (foreign) information gathered as the total number of domestic (foreign) information sources that the company consulted in the last year. Both variables range from 0 (company consulted no information source at all) to 12 (company consulted all twelve information sources). After examining the one-on-one relationship between these two variables and the three firm characteristics, the joint effects of these characteristics are analysed. Both analyses are conducted on the natural logarithms[2] of the two new variables (increased with 1)[3], therefore ranging from 0 to 2.56. Strikingly, a large percent of companies show no use of domestic (foreign) sources at all, *i.e.* 50% (70%). The average number of sources consulted by our respondents is 2.25 domestic sources and only 0.91 foreign sources, implying that the SMEs disregarded most of the available sources for export market information.

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[2] The reasons for this transformation are twofold. The first is related to the distribution of the original variable that is nonnormal and exhibits heteroscedasticity. Secondly, the benefit of the total number of sources consulted shows decreasing marginal returns, *i.e.* the difference in utility between 10 and 12 sources is less than the difference between 1 and 3 sources, which might be attributable to a learning effect or to duplication of information.

[3] The original variable ranging from 0 to 12, and the natural logarithm of 0 being nonexistent, a transformation has been carried out (number of sources + 1) to retain 13 values in the range.

5.1.1 Bivariate analyses

To test the first hypothesis 1, bivariate analyses of variance are conducted, after which t-tests are used to test the differences between the separate categories. Table 3 through 5 present the results for country-of-origin, sector, and size-class, respectively[4].

Source \ country	Austria	Belgium	Netherl.	Switzl.	Norway	Sweden	Finland
# domestic sources(*)	2.86[a]	2.79[ab]	2.50[c]	2.65[abc]	0.87[d]	0.65[d]	4.70[e]
# foreign sources (*)	0.51[a]	1.62[b]	1.35[cd]	1.14[d]	0.42[ae]	0.38[e]	2.18[f]

Table 3 Average number of domestic and foreign information sources consulted by the companies in the respective countries.
* = relationship significant in ANOVA at 1%
Averages in a row with the same superscript are not significantly different.

As table 3 shows, country-of-origin is clearly related to the number of information sources that firms consulted, confirming the first hypothesis. Both Norway and Sweden consult significantly less domestic ánd foreign sources. Austrian firms lag behind in the acquisition of foreign information, while Finnish companies are the exception upwards, consulting almost five domestic and more than two foreign information providers on average.

Source \ sector	textiles	electronics	food	furniture	metal products
# domestic sources (*)	2.07[a]	2.04[a]	2.22[ab]	2.13[a]	2.49[b]
# foreign sources (**)	1.05[ac]	0.91[a]	0.74[b]	0.61[b]	1.17[c]

Table 4 Average number of domestic and foreign information sources consulted by the companies in the respective sectors.
* = relationship significant in ANOVA at 5%, ** = idem at 1%
Averages in a row with the same superscript are not significantly different.

Table 4 shows that the average number of information sources also differs between the sectors, although not as widely as in the previous analysis of country averages. The metal product sector consults significantly more domestic sources (2.5) than the textiles,

[4] Tables represent the original averages, the ANOVA and T-tests are conducted on the natural logarithms.

electronics, and furniture sector (about 2), while the food industry falls between them with 2.2 sources. The textiles and metal sectors consulted foreign providers more often, while the food and furniture producing companies acquired their information through the smallest number of sources (less than 1 on average).

Source \ size class (employees)	0-9	10-49	50-99	100-199	>= 200
# domestic sources (*)	1.68[a]	2.26[b]	2.82[c]	2.86[c]	3.24[c]
# foreign sources (*)	0.35[a]	0.82[b]	1.55[c]	1.68[cd]	2.10[d]

Table 5 Average number of domestic and foreign information sources consulted by the companies in the respective size classes.
** = relationship significant in ANOVA at 1%
Averages in a row with the same superscript are not significantly different.

Table 5 shows the comparably large association between size class and number of sources consulted. As anticipated, this number increases with the firm size, except for the companies with 50 until 200 employees who show a more uniform acquisition behaviour. Similarly, a linear regression with the number of domestic (foreign) sources as the dependent variable and the number of employees (without categorization in classes) as the independent variable shows a positive and significant association: the number of domestic (foreign) sources increases with 1.79 (0.96) by every 100 employees. These results are rather surprising considering the earlier statement that smaller firms often lack resources, such as internal expertise, and, thus, have a larger need for (external) information. On the other hand, since the gathering of information is costly, the restriction of smaller SMEs to just a few information providers can be explained. To sum up, all three variables influence both the number of domestic and the number of foreign sources consulted by SMEs, by that confirming hypotheses 1.

5.1.2 Multivariate analysis

Hypothesis 2 assumes, among other things, that the number of information sources used by firms deviates within the *same* sector, over *different* countries. In this case, a simple one-on-one relationship might be insufficient to grasp the amount of information acquisition by an SME. We used a multivariate analysis of variance to examine the joint impact of the three intervening variables on the quantity of information, incorporating all main and two-way interaction effects. This analysis shows that all main effects are significant, except the main effect from the branch of industry on the amount of domestic sources. Besides, all interaction effects are significant, although again we can ignore one interaction effect, namely that from sector and size on the number of domestic sources (see Appendix 1). For example, Appendix 1 shows that the textiles and clothing sector in Norway (compared with the other sectors) consulted the largest number of domestic sources, while Austrian textile companies use the least sources of all sectors. Another example is the interaction between size class and sector on the foreign sources; the effect of size class is much stronger within the textile sector than in the electronics. Therefore, hypothesis 2 can be confirmed; the number of information sources consulted is simultaneously influenced by the three firm characteristics.

5.2 *The type of information source*

In this section, the third hypothesis is tested, stating that the use of a specific information source varies with the three background variables collectively. In the light of the restrictions imposed on us by the data, which are categorical, loglinear analysis is the appropriate method to investigate this hypothesis. This analysis is carried out on the frequency table classified by country-of-origin, branch of industry, firm size, and the use of the specific information source (e.g. domestic training institutions). All classification variables are the independent variables, and the cell frequency in the cross tabulation is the dependent variable (see Appendix 2). Appendix 2 shows that the interaction effects are the only significant effects, especially those between country and source (significant with 9 domestic and 10 foreign sources) and between size and source (significant with 9 domestic and 7 foreign sources). In almost all models, the inclusion of the interaction effect of country-source causes the value of the likelihood-ratio chi-square of the model to decrease most, when compared with the size-source interaction. This leads us to the conclusion that the former is the most important factor when determining the likelihood that companies consult a specific information provider. Sometimes (slightly more frequently for the foreign sources), the sector-source or even three-way interactions are significant.

Hypothesis 3 is validated by our data, insofar that the sector effects on the use of a source are minimal, and that the country and the size do (partly) determine whether an information source is consulted. E.g. if we examine the domestic information acquisition, Austria, the Netherlands and Switzerland turn more often to the business consultants, Chambers of Commerce, and national trade fairs, while Finnish companies consult mainly their customers, and Swedish companies use especially export clubs. This has implications for national governments when, for instance, drawing up size-class specific export promotion programs, which should take into consideration the type of information sources that this size-class normally considers and what sources it neglects. This can be an indication for the information need within that size-class, but also for the awareness of information sources. These findings hold also implications for the information providers when assessing their target segment (who consulted the provider) and potential customers (what SMEs have neglected the provider).

5.3 Export Performance and Number of Sources

Our last hypothesis assumes that the relationship between the amount of export market information (operationalized as the number of information sources consulted) and the export performance (measured by export sales) is influenced by the country-of-origin, the branch of industry, and the size class. This is a significant issue for firms, including SMEs, for the ultimate goals are realising customer satisfaction and, consequently, sustainable profits. By calculating partial correlations, we can examine the remaining correlation between the number of information sources consulted and the export sales after removing the correlation that is due to their mutual association with the other variables (*i.e.* country-of-origin, sector, and size class). Without including these covariates, the (positive) correlation between export sales and the number of domestic and foreign information sources is 0.12 and 0.26, respectively (n = 1531 after listwise deletion of missing values). However, if we do include country-of-origin, sector and size class, these values drop to 0.06 and 0.19, but remain significant.

So, though the amount of export market information and the export performance are positively correlated, intervening firm characteristics influence this association, confirming the last hypothesis. Ignoring the covariates might lead to incorrect conclusions in the assessment of the importance of export market information for export performance. In every country, sector or size class, a dissimilar number of information sources can be desirable for the SMEs, making the issue of "more information leads to a better performance" too simple.

6. Conclusions, limitations and challenges

Considering the results of the analyses, all hypotheses are accepted. The firm size, the branch of industry and the national culture of the firm all significantly influence the *amount* of information gathered, the *type* of information source consulted, and the *relationship* between the quantity of export market information collected and the export sales (as an indicator for export performance). Therefore, studies that assume a direct association between export market information and export performance ignore important intervening variables. Governments should not only consider the general situation in a country and offer general information, but also acknowledge that firms within different sectors and/or size classes display deviating information acquisition behaviour, when developing public promotion programs. Next, governments should aware of the lesser use of information sources by smaller SMEs, and might try to enhance this usance.

These findings have implications for small business managers too. The relationship between export market information and export performance remains positive after a correction for intervening variables. Thus, companies that gather export market information only to a small extent or not at all can improve their export performance, provided they exploit the available information providers more. From 0.4 to 3.6% of export performance is explained by (domestic and foreign) market information, after adjusting for other variables, where foreign information seems 9 times more effective than domestic sources.

Our results show providers of information that SMEs in different countries and size classes use different information sources. They can tailor their marketing mix to the type of companies that already consult them, but they can also analyse the opportunities in the market, *i.e.* analyse the nonusers of the source. This might also shed some light upon the reason behind this neglect.

Of course, no study is without its limitations. Unfortunately, the INTERSTRATOS data set is not able to give us any insights into the quality and effectiveness of the data coming from the different information sources, Yet, this might be an important stepping stone to export success. Other intervening variables, such as the quality of the research conducted and the effectiveness of the use of this information, might influence the export performance (Hart and Diamantopoulos 1993). Companies gathering information from

fewer sources are not automatically collecting less relevant information than firms that consult many providers. Glazer *et al.* (1992) state that the main goal of information acquisition should be the collecting of *relevant* information implying a selective eye in choosing an information provider.

A second possible research question relates to the internationalization process of the firm, thus incorporating a time aspect (Johannson and Vahlne 1977, Cavusgil 1980). Do firms decrease the number of information providers they consult along the path of internationalization or do they just switch to other sources of information? Subsequently, do they switch form informal to formal sources or is it the other way around? Therefore, a large area of research is still waiting for cultivation. This study tries to move one step upon this path in attempting to aid the SME manager in assessing the relevance of export market information.

Appendix 1 Multivariate Analysis.

Country / Size class		0-9	-49	-99	-199	>200
Austria		2.32	3.16	3.16	3.63	3.74
Belgium		1.84	2.92	3.22	4.22	4.39
the Netherlands		1.73	2.32	3.16	3.60	3.67
Switzerland		2.18	2.59	2.86	3.03	2.64
Norway		1.22	1.36	1.54	1.55	1.99
Sweden	1.11	1.30	1.49	1.49	1.92	
Finland	2.94	4.90	6.36	5.26	6.55	

Table A1.1 Average logarithms (transformed into original numbers) of the total number of domestic information sources (+1) for the two-way interaction Country * Size.

Country / Industry	textiles	electronics	food	furniture	metal
Austria	2.39	2.77	3.03	2.86	2.64
Belgium	2.71	3.15	2.92	2.29	3.19
the Netherlands	2.34	2.29	1.93	1.99	2.72
Switzerland	2.41	2.48	2.56	2.59	2.86
Norway	1.52	1.46	1.30	1.48	1.28
Sweden	1.25	1.35	1.32	1.26	1.36
Finland	4.39	5.26	3.71	4.31	5.05

Table A1.2 Average logarithms (transformed into original numbers) of the total number of domestic information sources (+1) for the two-way interaction Country * Industry.

Appendix 1 Multivariate Analysis (cont.)

Country * Size		0-9	-49	-99	-199	>200
Austria		1.11	1.32	1.73	2.32	1.88
Belgium		1.34	1.95	2.25	3.10	3.42
the Netherlands		1.27	1.67	2.31	2.44	3.22
Switzerland		1.39	1.48	2.03	2.08	1.99
Norway		1.11	1.17	1.31	1.23	1.88
Sweden	1.06	1.14	1.34	1.38	1.67	
Finland	1.63	2.36	3.39	3.19	4.14	

Table A1.3 Average logarithms (transformed into original numbers) of the total number of foreign information sources (+1) for the two-way interaction Country * Size.

Country * Industry	textiles	electronics	food	furniture	metal
Austria	1.38	1.54	1.26	1.16	1.28
Belgium	1.97	1.99	2.01	1.70	2.18
the Netherlands	1.99	1.52	1.43	1.42	1.93
Switzerland	1.82	1.67	1.48	1.54	1.73
Norway	1.23	1.28	1.08	1.23	1.22
Sweden	1.12	1.22	1.17	1.20	1.23
Finland	2.56	2.86	1.80	1.95	2.75

Table A1.4 Average logarithms (transformed into original numbers) of the total number of foreign information sources (+1) for the two-way interaction Country * Industry.

Size * Industry	textiles	electronics	food	furniture	metal
0-9	1.21	1.28	1.08	1.08	1.27
10-49	1.63	1.57	1.34	1.31	1.48
50-99	2.01	1.67	1.72	1.84	2.11
100-199	2.29	1.65	1.72	1.90	2.10
>200	3.03	1.95	2.05	1.52	2.41

Table A1.5 Average logarithms (transformed into original numbers) of the total number of foreign information sources (+1) for the two-way interaction Size * Industry.

Appendix 2 Log-linear Analysis[5].

Interaction / degrees of freedom	1	2	3	4	5	7	8	9	10	11	12
C / 6	381.0 (.00)	430.3 (.00)	248.0 (.00)	323.0 (.00)	270.3 (.00)	381.1 (.00)	76.5 (.00)	67.5 (.00)		102.9 (.00)	
I / 4							23.9 (.00)				
S / 4	96.8 (.00)	37.8 (.00)	16.1 (.00)		19.9 (.00)	43.1 (.00)	59.6 (.00)	42.3 (.00)		66.8 (.00)	47.5 (.00)
CI / 24									46.1 (.00)		41.8 (.01)
CS / 24									31.3 (.01)		
IS / 16											
Goodness of fit	180.9 (.10)	183.1 (.35)	216.1 (.00)	190.8 (.06)	219.3 (.00)	196.5 (.02)	188.3 (.03)	187.2 (.06)	142.7 (.04)	189.6 (.04)	128.9 (.07)

Table A2.1 Results of the loglinear analysis on domestic information sources; only significant likelihood ratio chi-square values and p-values[6].
Legend: C = country, I = industry, S = size class;
1-12 = information sources (see table 1).

[5] Loglinear modelling is a method to analyse effects in multi way contingency tables, by describing the expected (log-) frequencies in the table as a function of main effects and interaction effects of the variables, using likelihood ratio tests. The loglinear analysis has been conducted step by step, removing nonsignificant terms from the complete model. For a detailed description, see Magdison (1994, in Bagozzi 1994).

[6] Table A2.1 does not include the sixth domestic information source (*i.e.* export clubs), while the solution did not converge, making a specification of the model impossible.

Appendix 2 Log-linear Analysis (cont.)

Interaction./ degrees of freedom	1	2	3	4	5	6	7	8	9	10	11	12
C / 6	68.8 (.00)	50.9 (.00)	46.1 (.00)	141.8 (.00)	159.8 (.00)		77.1 (.00)	34.6 (.00)		89.9 (.00)	181.0 (.00)	41.6 (.00)
I / 4	15.1 (.00)							13.6 (.01)			18.8 (.00)	16.2 (.00)
S / 4	38.6 (.00)		45.0 (.00)					44.0 (.00)	28.1 (.00)	59.2 (.00)	121.6 (.00)	34.6 (.00)
CI / 24												
CS / 24				41.1		39.3 (.03)						
IS / 16		30.3 (.02)		(.00)	37.9 (.00)		34.6 (.00)					
Goodness of fit	134.0 (.85)	146.9 (.25)	158.6 (.43)	160.5 (.07)	192.9 (.00)	130.7 (.04)	158.2 (.02)	143.7 (.67)	146.6 (.80)	186.1 (.05)	156.8 (.38)	122.7 (.96)

Tabel A2.2 Results of the loglinear analysis on foreign information sources; only significant likelihood ratio chi-square values and p-values.
Legend: C = country, I = industry, S = size class;
1-12 = information sources (see table 1).

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